

Desktop Virtualization Working Group – Final Report to ITMC February 2011

Introduction:

Through the Information Technology Managers Council, a working group representing a variety of state agencies was formed in June 2010 to analyze and make recommendations regarding desktop virtualization.

Members included: Barry, Stephen (DOR); Burchett, Michele; Cundith, Maris; DeWitt, Greg; Hallinan, Bill; Holman, Steve; Jackson, Robin (DLI); Kane, Anne; Kaufman, Kyle; Kessler, Kimberly; Krissoovich, Jim; Kroll, Chad; Merrick, Rex; Millis, Aaron; Montgomery, Tim; Rutledge, Joshua; Sweeney, Michael; Swenson, David; Trench, Darran; Wang, Chuyan. In addition, many other individuals participated in various meetings, discussions and presentations as schedules and interest dictated.

A [Desktop Virtualization Working Group SharePoint site](#) was also established to track the activities and document the work of the group.

Goals and Objectives:

The primary goal of the working group was to recommend a plan of action to ITMC.

Other objectives included:

- Identify early adopters and lessons learned from State agencies already deploying desk top virtualization.
- Identify best practices – what are other state/governments doing in regard to desk top virtualization?
- Identify how desktop virtualization can improve operations.
- Identify staffing challenges.
- How can desktop virtualization lead to desktop as a “service” and minimize business units concerns?
- Address issues related to the Governor’s cost Savings ideas such as moving computing resources to the SMDC and PC replacement cycle.

Desktop Virtualization Definition:

What is desktop virtualization? There are a multitude of definitions and interpretations, depending on the technology being used and the method of virtualization being deployed. The spectrum runs from providing remote access solutions such as Citrix to using virtualized applications on a standard PC to fully virtualized desktops. In short, there is no easy definition.

Within the context of this report, desktop virtualization means delivering applications with devices and services that are provisioned, managed and deployed centrally rather than through traditional desktop computers with locally installed software and operating systems.

Findings:

Identify early adopters and lessons learned from State agencies already deploying desktop virtualization:

Most agencies' experiences with desktop virtualization stem from server virtualization, and to a lesser extent, providing remote desktop services through Citrix or terminal services. Outside of Citrix, most of the deployments/use of desktop virtualization have occurred within the technical user or agency IT groups and have not reached business user groups. These deployments have also generally been exploratory, experimental and on an informal basis.

Within in the context of the desktop virtualization definition above, the Department of Revenue is the only agency identified to have a production desktop virtualization environment established and serving a business user group. The Department of Revenue provided this synopsis of their deployment:

- *Thin client is being use at the Department of Revenue for the processing area. This hardware works well for the type of work they do. There is no traditional hard drive. All the programs the staff uses are put on the central server.*
- *Purchased 43 terminals and have deployed 40 with the cost of \$503 per terminal.*
- *Annual saving of \$21,000 in energy and hardware from the deployment. Benefits included more desk space, less fan noise, longer replacement cycle, minimal training on log in, and the application patching can be done in one place. Also like from a security prospective and better technical support perspective.*
- *End-user performance is satisfactory and comparable to traditional desktops after usability issues (primarily printing) were resolved. (August MT Digital Government presentation)*

Other Desktop Virtualization Lessons Learned:

- Direct hard cost savings may not be a driver in adopting desktop virtualization. However, there can be a demonstrated return on investment when accounting for energy and resource savings and taking advantage of low consumption incentives.
- On the IT provider side, effective use of virtualization (meaning fewer staff needed to support desktops) can enable the repurposing IT staff to more valuable efforts such as business improvement activities vs. infrastructure support activities.
- Establishing the infrastructure to support desktop virtualization is complex and can be costly. For small to medium sized agencies, the upfront costs and efforts to simply establish and maintain the necessary infrastructure may be difficult to justify in short-term or narrow-focus scenarios.

- There are no one-size-fits all solutions regarding the type of technology or method of virtualization. However, we expect there to be opportunities to standardize on methodologies and technologies across departments.
- Virtualized desktops, if properly managed, are inherently more secure than traditional desktops. This alone may serve as a driving factor for some agencies to adopt.

Identify best practices – what are other state/governments doing in regard to desk top virtualization?

Most “best practices” revolve around specific technology or vendor solutions. There are no well-defined trends identified for what other states and government agencies are doing in desktop virtualization, although the overall movement is towards implementing some form of desktop virtualization to meet “do more with less” pressures. In general, what we found was that “best practices” are to select and use mainstream virtualization technology (eg. VMware, Citrix, Hyper-V) that your agency may already be invested in to provide a starting point for developing and establishing a desktop virtualization strategy.

Identify how desktop virtualization can improve operations.

While there are many differences between managing servers vs. managing desktops, there are more similarities. To that end, we looked at trends in server virtualization to indicate some of the improvements we could see with desktop virtualization:

- Less staff required to manage and maintain systems. Staff can be reduced or repurposed to more valuable tasks.
- Better control over configuration and management, resulting in preventing problems rather than responding and fixing, leading to a better user experience.
- Traditional desktop management tools and investments are still valuable and can be used in virtualized desktop environments.
- Inherent security benefits of virtualization, data resides in the data center, not on distributed systems.
- Consolidation and standardization of the desktop infrastructure, reducing costs and operational complexities.

Identify staffing challenges.

We found that most agencies, even large ones, have a difficult time dedicating staff to desktop virtualization efforts beyond informal efforts. Most are stuck in the cycle of supporting current systems through current processes and technologies and don’t have the time or resources to adequately make the jump to a desktop virtualization model. We found that training and organizational commitment and coordination are the major challenges for technical staff in adopting desktop virtualization.

How can desktop virtualization lead to desktop as a “service” and minimize business units concerns?

Business units are becoming more savvy and are beginning to ask for desktops, servers and applications to be delivered “as a service”. In addition, security and operational expectations are becoming more difficult and complex (thus expensive) to deliver with traditional desktops and laptops. Agency IT shops and business units alike are generally not interested in owning, managing and tracking IT assets and want to focus efforts on improving business operations. Desktop as service at the enterprise level would also address the staffing concerns related above and an opportunity to leverage economies of scale.

Address issues related to the Governor’s cost Savings ideas such as moving computing resources to the SMDC and PC replacement cycle

Desktop virtualization provides an excellent opportunity to move the processing and storage currently distributed across thousands of traditional desktops in offices throughout the state (and which are mostly underutilized) to the SMDC. This action would directly support the Governor’s cost savings initiative by reducing costs, resource use and energy consumption.

Summary and Recommendation

Use what you already own and know and leverage other agencies or the enterprise for what you don’t know:

The technology doesn’t really matter. Agencies are likely vested in one solution or another already, either through server virtualization or through existing efforts to provide desktop virtualization services. Initial approaches to virtualization should not be a technology platform choice or comparison contest, but rather as a service delivery issue: In essence, how can we best deliver desktop services to our users, regardless of the technology or provider. Look to other agencies or the enterprise that may have developed a more mature infrastructure or methodology and find opportunities to use them. Doing so will almost always be cheaper than trying to replicate them and efforts can be combined.

Understand the drivers for pursuing desktop virtualization:

As IT Managers are asked to do more with less and deliver services to increasingly more sophisticated and demanding users, efficiency will probably be the biggest driver from the IT side. Agency IT Managers will need to work with their business owners to determine if the potential benefits are worth the risk, cost and work involved with moving to a desktop virtualization model. However, looking at where servers (becoming increasingly virtualized) and software (Software as a service and on demand or cloud service expectations) have already gone, virtualization of the desktop will certainly factor into how desktops are provisioned and deployed to users in the future.

For the most part, we found the business units to be indifferent to desktop virtualization; they’re thinking more in terms of service delivery - if the service meets the business needs and is within the cost expectations, it really doesn’t matter how it’s delivered. Direct cost savings are not likely to directly drive desktop virtualization adoption with the exception of potential cost savings in the area of resource

and energy consumption. These costs are currently born indirectly by most agencies and the incentive and benefits of reduced consumption are also indirect. The SMDC server consolidation effort is currently working towards making this benefit tangible to participants and we expect desktop virtualization to follow those efforts.

Take an evolutionary approach to implementing desktop virtualization:

The purpose behind managing and maintaining computers, operating systems and the associated infrastructure and staff is so we can deliver applications that work to our users. Most IT shops have significant investments in the tools and staff knowledge necessary to provide these services. Quickly moving entirely to a desktop virtualization solution is not reasonable or recommended.

Taking an evolutionary approach will allow IT service providers to be deliberate in selecting the use case scenarios in order to determine where it makes sense to move and transition our capacity and capability as service providers. A successful, (meaning we looked objectively and did thorough requirements analysis) will tell us exactly what we need to do to make a virtual desktop deployment successful, or perhaps in some cases, make the case against it. Alec Taylor from IVOXY talked about application virtualization as an area he would recommend many of his clients to look at first before going to a full-blown virtualized desktop environment.

RECCOMENDATION:

The ITMC Desktop Virtualization Working Group recommends a desktop virtualization “Proof of Concept/Use Case Scenario” Pilot Project be conducted:

- The overall objective of a “Proof of Concept” project would be to determine the feasibility of agencies delivering desktop services through an enterprise desktop virtualization infrastructure.
- The proof of concept would be conducted as a “formal” IT project and follow accepted project management practices and the [Statewide Information Sytems Interim Policy Establishing and Conducting Information Technology Pilots](#). This policy very clearly outlines the process and steps necessary to conduct a pilot and provides for specific requirements and actions to be completed.

Upon approval of this recommendation by ITMC, the Department of Administration IT Manager will submit a Pilot Project Request and Plan to the State CIO within 3 months:

- The Department of Administration, State Information Systems Services Division (as a separate entity from the DOA for the purposes of the pilot) and the Teacher’s Retirement System are the preliminarily committed agencies. Other agencies will be solicited to participate and commit resources prior to the submission of the Pilot Project Request and Plan to the CIO.
- The DOA IT Manager will serve as the Testing Official.
- The pilot project will not require additional funding and will utilize existing resources.
- The pilot project period shall not exceed 9 months.
- The Testing Official will submit a final report on the results and findings of the pilot to the CIO within 30 days after the completion of the pilot.